

Piedmont – South Atlantic Cooperative Ecosystems Studies Unit Statement of Work

Between
NATIONAL PARK SERVICE
And
UNIVERSITY OF SOUTH CAROLINA
(PSAC-CESU Cooperative Agreement Number P13AC00443)

Project Title: Hurricane Sandy-Modeling salt marsh condition and resiliency in four
National Parks based on local sea level rise prediction

CESU Cooperator: University of South Carolina

Principal Investigator: Dr. James Morris
Director-Baruch Institute for Marine & Coastal Sciences

Agreement Technical Rep (ATR): Charles Roman
Northeast Region Chief Scientist

Total: Not to exceed \$ 248,041

Fiscal Year Funding: 2015

Project Objective: This project is funded through Hurricane Sandy mitigation funds with the objective to conduct sea-level rise response modeling for multiple salt marsh sites within 4 National Parks in the Northeast Region; Cape Cod National Seashore, Fire Island National Seashore, Assateague Island National Seashore and Gateway National Recreation Area. The National Parks Service is interested in collaborating with the University of South Carolina to jointly understand salt marsh accretion and plant community changes over the course of the next 50-100 years.

I. AUTHORITY AND PUBLIC PURPOSE

Through the statutes of 16 USC §1a-2(j) and 16 USC §5933 and the words of the 1998 NPS Omnibus Act, Congress has established the authority for the NPS to enter into CESU cooperative agreements. This project is authorized under these authorities.

Cooperative Agreement Number P13AC00443 was entered into by and between the Department of the Interior, National Park Service (NPS) and the University of South Carolina. The agreement is known as the Piedmont South Atlantic Coast Cooperative Ecosystems Studies Unit (PSAC) Agreement. The purpose of this PSAC Agreement is to support National Parks in the Southeast Region of the National Park Service, and Service wide, by providing research, technical assistance, and education through the cooperative relationship with partners of the PSAC. Unless otherwise specified herein, the terms and conditions as stated in the PSAC Agreement will apply to this Task Agreement.

The primary purpose of this study is not the acquisition of property or services for the direct benefit or use by the Federal Government, but rather to accomplish a public purpose of support or stimulation authorized the Legislative Authorities listed above.

This project fulfills a Public Purpose of support or economic stimulation through:

- Assisting in the promotion, facilitation, and improvement of public understanding of natural, cultural, social and/or physical resources of National Parks.
- Sharing the information, products and/or services identified or developed by this project through a variety of strategies to increase public awareness, knowledge and support for stewardship of the nation's resources.
- Providing opportunities for undergraduate and graduate students to learn about the nation's resources by spending time working on projects in National Parks. The NPS receives the indirect benefit of completing resource conservation and protection projects.

II. SCOPE OF WORK

The National Park Service is faced with managing a wide variety of ecosystems and organisms under the increasing threats associated with global climate change. In addition, coastal park managers and private land managers are faced with threats such as acceleration in sea-level rise, increase and frequency of coastal storms, and changes in tide and inundation patterns. Salt marsh, which makes up vast areas of coastal park lands in the Northeast, provide protection and important buffer zones during storms, protecting more inland land holdings. They are considered one of the most important land areas worldwide because of their role as carbon-sinks and filtration systems for upland run-off and water-table pollutants. They also provide critical feeding and breeding habitat for many key coastal organisms and endemic species. Coastal National Parks in the Northeast are comprised of some of the most pristine salt marsh habitat in the world, but managers are facing its increasingly rapid loss to accelerated rates of sea-level rise and other contributing factors related to human influences. As the frequency and power of coastal storms increases due to climate change, the value and importance of these natural buffer and protective areas will continue to rise, and protection and mitigation of this key resource is vital.

Following Super Storm Sandy, funding was made available through the Office of the Secretary for mitigation activities. This project is funded as part of a larger project to collect high-resolution, on-the-ground elevation and other data for key National Park areas affected by Super Storm Sandy. Salt marsh areas within four coastal parks in the Northeast Region were selected for data collection and resiliency modeling in order to incorporate modeling results into management, scientific knowledge of coastal areas and future mitigation goals. This effort will incorporate solid, scientific information which will be used by both the general public and by the affected national parks.

NPS scientists in the Northeast Region are in the process of collecting detailed ground elevations, vegetation, accretion information, and water level data on select marshes

within four coastal parks. This effort is to provide scientists, managers and the public with a better understanding of salt marsh resiliency in light of sea level rise and climate change in general. This project will entail sea-level rise response modeling utilizing the NPS datasets. The project will be conducted for multiple salt marsh sites within four National Parks including; Cape Cod National Seashore, Fire Island National Seashore, Assateague Island National Seashore and Gateway National Recreation Area. The result of this project will help to inform NPS managers, the scientific community, and the public how marshes with these four National Parks are expected to change and at what rate over the course of the next 50-100 years.

III. APPLICABLE DOCUMENTS

- <http://science.nature.nps.gov/im/units/ncbn/>
- <http://www.edc.uri.edu/initiatives/hurricane-sandy-nps-elevation-mapping-project>
- <http://www.edc.uri.edu/Sandy/home>

IV. TASKS

1. the CESU cooperator will provide quarterly project reports. Quarterly written progress reports are required for all National Park Service research projects that are associated with post-Hurricane Sandy support. Hurricane Sandy Progress Reports should be submitted to the NPS project manager, Sara Stevens (sara_stevens@nps.gov). Reports should include, but are not limited to:
 - *Accomplishments during the reporting quarter.* Accomplishments can be wide ranging and may include progress with hiring project staff/students, coordination with project partners or agencies, field and/or lab work conducted, data analysis and interpretation, technical writing, etc. It would also be appropriate to highlight any interesting findings.
 - *Reporting.* Report on professional presentations/seminars/lectures made during the reporting quarter (provide presentation authors, title, meeting, and date), publications, theses/dissertations, or technical reports submitted or published, other technical materials prepared (e.g., maps, websites).
 - *Outreach:* Report on any outreach activities conducted during the reporting quarter and outreach materials prepared.
 - *Youth and Military Veteran Engagement* are important aspects of Hurricane Sandy projects. Provide the number of youths involved and estimate of hours worked for all youth during the reporting quarter. Youth can be defined as students (graduate or undergraduate) associated with the project, youth involved in outreach activities (e.g., K-12 through college), and other youth (≤ 25 years old). Similar reporting for Veterans (number of Veterans and estimate of hours worked).
 - *Plans for the next quarter.* Report on expected activities to be conducted during the next quarter.

- *Problems Encountered.* Report on problems that were encountered or are expected in the future. Are there tasks or products identified in the project proposal that may not be accomplished, does the project schedule need to be modified, do project budget categories need to be revised, will there be a change in the project investigators or key personnel, etc.
2. the CESU cooperator will compile existing salt marsh data for four National Parks (Cape Cod National Seashore, Fire Island National Seashore, Gateway National Recreation Area, Assateague Island National Seashore) as they become available from the NPS. Data collection began in the parks in 2013 and will continue through 2015. Data compilation will include: RTK elevations and resulting DEMs, water level, vegetation, nekton, TSS and sediment elevation data for select marshes in the four Northeast Region coastal parks.
 3. the CESU cooperator will analyze and model these data in relation to existing and future local sea-level rise predictions for each park over the course of a 50-100 year time period using the marsh model MEM 5.
 4. through this modeling process the CESU cooperator will estimate the ability of these NPS marshes to build vertically under these future sea-level rise and global change scenarios.
 5. the CESU cooperator will consult with NPS personnel and advise park scientists about additional data needs to improve resiliency modeling for these marshes, now and in the future.
 6. the CESU cooperator will provide on a park-by-park and marsh-by-marsh basis, predictions of salt marsh resiliency over time and present this information to managers and others for future mitigation purposes through final reports for each park. Reports will include figures and maps of the marsh areas detailing the outcome of the modeling effort showing how marsh condition is predicted over the course of 50-100 years. Managers should be presented with a clear idea of what marsh areas in their parks are at highest risk of subsidence due to sea-level rise and increased storm surge, and a predicted time period for subsidence. Recommendations for management, long-term monitoring, and additional data needs for more precise modeling will be including in the report.
 7. the CESU cooperator will travel to each of the parks to present results of the project for that specific park to resource managers and superintendents.
 8. the CESU cooperator will be available for interviews with science communicators associated with this project through a separate cooperative agreement with the University of Rhode Island, and available to answer questions needed to develop communication materials for the parks and public associated with the modeling effort and results.

V. SUBSTANTIAL INVOLVEMENT

Substantial involvement, in accordance to 505 DM 2.8 and 2.9 will be accomplished by:

1. The National Park Service Northeast Coastal and Barrier Network (NCBN) and cooperator collaborating or jointly participating in reviewing and/or modifying proposals, data and/or reports.
2. The National Park Service Northeast Coastal and Barrier Network (NCBN) and cooperator jointly participate in accomplishing the project.
3. Joint participation between the National Park Service Northeast Coastal and Barrier Network (NCBN), science communication specialists from the University of Rhode Island, and cooperator is anticipated in the development of interpretive messages presented in various interpretive media (videos, waysides, brochures, etc.).

VI. PRODUCTS AND SCHEDULE

Products:

- Quarterly reports will be provided throughout the life of the project quarterly reporting period end dates are the following: March 31, June 30, Sept 30, and Dec 31, with quarterly reports due 30 days after the end of the reporting period.
- Draft final reports for each park will be submitted via email to the project lead, Sara Stevens, on or before July 1, 2016 in MS Word format. These drafts will be peer reviewed and comments returned to the cooperator by August 15' 2016.
- Final reports for each park will be submitted via email to the project lead, Sara Stevens, on or before September 30, 2016 in MS Word format.

All products must be approved by the ATR prior to final payment.

The Northeast Coastal and Barrier Network, Northeast Region National Park Service and the Piedmont South Atlantic Coast Cooperative Ecosystem Studies Unit will be acknowledged in any peer reviewed publication generated from this project. The National Park Service will have unlimited rights to the all records, images, maps and notes produced in relation to this project.

Schedule:

The period of performance shall be from 12/01/2014 to 11/01/2016.

12/2014 - Notice to proceed, kick off meeting/conference call

08/2015 – Progress meeting (conference call)

01/2016– Progress meeting (conference call)

07/1/2016 –Draft final report/ submitted

09/30/2016 – Final report submitted, project wrap up

VII. GOVERNMENT FURNISHED PROPERTY

The NPS will provide the cooperator with all existing data collected on salt marshes within Cape Cod National Seashore, Assateague Island National Seashore, Fire Island National Seashore and Gateway National Recreation Area. These data will include, but are not limited to: RTK GPS elevations and resulting digital elevation models (DEMs), vegetation, nekton, total solid sediments (TSS), sediment elevation table (SET) data, and water level data.

VIII. OTHER CONSIDERATIONS

None

IX. BUDGET

Budget Summary:

SALARIES AND WAGES -SENIOR PERSONNEL	Year 1	Year 2	<u>TOTAL</u>
James Morris	16,145	16,629	32,774
SALARIES AND WAGES- OTHER PERSONNEL			
Graduate Research Assistant	11000		11,000
50% Time, 12 Calendar Months			
Other Professionals (technician)	48000	48000	96,000
see below for break out			
TOTAL SALARIES AND WAGES	75,145	64,629	139,774
FRINGE BENEFITS	23,640	25,684	49,324
TOTAL SALARIES, WAGES AND FRINGE BENEFITS	98,785	90,313	189,098
TRAVEL	8,000	5,000	13,000
OTHER DIRECT COSTS			
Materials and Supplies	6,000	3,000	9,000
Modified Total Direct Costs (MTDC)	112,785	98,313	211,098
TOTAL DIRECT COSTS	112,785	98,313	211,098
INDIRECT COSTS			
Indirect Costs MTDC * 17.5%	19,737	17,205	36,942
TOTAL PROJECT COSTS	132,523	115,518	248,041

Budget Justification

A. Salaries and Wages- Senior Personnel: USC requests 1 mo of summer salary annually (8.33% effort) for Morris (base salary \$145,304) who will be responsible for the analysis of environmental data and parameterizing the marsh model MEM for select marshes in the northeast in areas affected by Hurricane Sandy. Morris will be responsible for coordinating the information flow between USC and the agency partners. He will attend PI meetings. He will supervise the work of a part time graduate student in Y1 and a fulltime postdoctoral fellow.

B. Salaries and Wages- Other Personnel: Salary support is requested for 6 months of salary in year 1 for a graduate student who will be working on a GIS of the study sites. Salary is also requested for a postdoctoral fellow in Years 1 and 2 @ \$48,000 annually. The postdoc will be coding, data mining, and helping with the analysis of data and modeling.

C. Fringe Benefits: Fringe Benefits are calculated as direct costs at the University's current rate of 24.185% for faculty and staff. Health insurance under the state plan is \$524.30 per month (employee/spouse) for the postdoctoral fellow; insurance is not requested for Morris. The fringe rate for the graduate student is 0.55%. Actual rates in place during the time of the award will be charged.

D. Permanent equipment: none is requested

E. Travel: A total of \$5,000 is requested in each of Years 1 and 2 for travel. The budget will cover the costs of travel between Columbia, SC and a PI meeting in the northeast and to an annual meeting (e.g. AGU in San Francisco) to present the results. In addition, \$3,000 is requested in Year 1 for foreign travel. The foreign travel is to attend the meeting of the American Society of Limnology and Oceanography meeting in Granada, Spain. Morris will give a talk on the marsh modeling work in a special session on blue carbon.

F. Other direct costs:

1. Materials and Supplies: USC is requesting \$6,000 in Year 1 and \$3,000 in Year 2 to cover the cost of miscellaneous supplies, including a new 64b desktop and laptop computers, printer, monitors, and software.

2. Tuition and Fees: Tuition is included for the graduate student at the current rate of \$501 per credit for a total of 7 credits.

G. Indirect Costs: The current indirect cost rate for this CESU is 17.5% of Modified Total Direct Costs (direct costs minus tuition).

X. KEY PERSONNEL

National Park Service Alison Smith Contract Specialist NPS Southeast Region 100 Alabama St. SW, 1924 Building Atlanta, GA 30303	Principal Investigator Dr. James Morris Director, Belle W. Baruch Institute for Marine and Coastal Sciences University of South Carolina Belle Baruch Institute
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Ph:(404) 507-57-- Fax: (404) 562-3256 e-mail:Alison_Smith@nps.gov NPS PSAC-CESU Coordinator Dr. Ray Albright 2431 Joe Johnson Dr., Rm 274 Knoxville, TN 37996-4563 Ph:(865) 974-8443 Fax: (865) 974-4714 e-mail:ray_albright@nps.gov Park Representative (or ATR) Charles Roman, PhD National Park Service University of Rhode Island Bay Campus 215 South Ferry Rd. Narragansett, RI 02882 401-874-6886 (office) 401-261-7731 (cell) 401-874-6887 (fax) charles_roman@nps.gov Project Lead/Technical Advisor Sara Stevens Northeast Coastal and Barrier Network Program Manager Coastal Institute Kingston University of Rhode Island Kingston, RI 02879 Ph:(401)-874-4548 e-mail:sara_stevens@nps.gov	Columbia, SC 29208 Ph:(803) 777-5288 Fax: (803)777-3935 e-mail: morris@inlet.geol.sc.edu Agreements Official Debra J Wingard Senior Sponsored Programs Administrator Office of Sponsored Programs 1600 Hampton Street, Suite 414 University of South Carolina Columbia, South Carolina 29208 Ph:(803) 777-4857 Fax: (803)777-3935 e-mail: dwingard@mailbox.sc.edu
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